Paper No. 24

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte BENNO KNAUER, PETER HENNENBERGER,
KLAUS HILLIGARDT, ECKARD SCHAUB,
and HORST BULLACK

Appeal No. 2003-1968
Application No. 09/327,963

ON BRIEF

Before WARREN, KRATZ and POTEATE, Administrative Patent Judges.
KRATZ, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's refusal to allow claims 1, 3-6 and 11-13, which are all of the claims pending in this application.

BACKGROUND

Appellants' invention relates to a gas-phase fluidized bed reactor for polymerizing ethylenically unsaturated monomers. The reactor includes a gas distribution plate that forms the lower boundary of the reactor space and includes a plurality of gas flow orifices having outlet sides that are conically widened at a

20-40˚ angle. An understanding of the invention can be derived from a reading of exemplary claim 1, which is reproduced below.

> 1. A gas-phase fluidized-bed reactor for polymerizing ethylenically unsaturated monomers, comprising a reactor space (1) in the form of a vertical tube, a calming zone (2) adjoining the upper part of the reactor sapce, a circulated gas line (3) in fluid communication with said calming zone, a circulated gas compressor (4) and a cooling apparatus (5) in fluid communication with said circulated gas line, a gas distributor plate (6) which forms the lower boundary of the reactor space and, optionally, a flow divider (7) below the gas distributor plate, in fluid communication with said circulated gas line, wherein the gas distributor plate (6) has a plurality of gas flow orifices (8) whose outlet sides are widened conically at an angle α of from 20 to 40°.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Jenkins, III et al. (Jenkins)	4,588,790	May 13, 1986
Chang et al. (Chang)	5,905,094	May 18, 1999

Claims 1, 3-6 and 11-13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Jenkins in view of Chang.

We refer to the brief and to the answer for a complete exposition of the opposing viewpoints expressed by appellants and the examiner concerning the issues before us on this appeal.

OPINION

Upon careful review of the respective positions advanced by appellants and the examiner with respect to the rejections that are before us for review, we find ourselves in agreement with appellants' viewpoint in that the examiner has failed to carry the burden of establishing a prima facie case of obviousness. See In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); In re Piasecki, 745 F.2d 1468, 1471-1472, 223 USPQ 785, 787-788 (Fed. Cir. 1984). Accordingly, we will not sustain the examiner's rejection.

Jenkins discloses a gas-phase fluidized bed polymerization reactor that includes a calming zone, circulating gas line, compressor, cooling apparatus, a flow divider and a gas distribution plate including ports (29, fig. 2) and angle caps (36a and 36b, fig. 2).

The examiner (answer, page 3) acknowledges that Jenkins does not disclose the use of a distributor plate having a plurality of conically widened gas flow orifices in the manner as here claimed. To make up for that missing teaching of the claimed subject matter, the examiner turns to Chang.

Chang is directed to a Fischer-Tropsch slurry hydrocarbon synthesis process carried out in a reactor wherein synthesis gas is bubbled up through a slurry of catalyst particles in a

hydrocarbon liquid located above a gas distribution grid. Chang discloses that a plurality of throat and cone gas injectors are located in the distribution plate. See drawing figures 1-10 of Chang.

According to the examiner (answer, page 3):

> [i]t would have been obvious to one of ordinary skill in the art at the time the invention was made to use the distributor plate of Chang in the apparatus of Jenkins as one would be motivated to look toward any known distribution plate located below a fluidized bed and above a non-particle space as functional equivalents.

As part of meeting the initial burden of establishing a prima facie case of obviousness, the examiner must determine whether the differences between the subject matter of the claims and the prior art "are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art" (emphasis added). 35 U.S.C. § 103(a)(1999); Graham v. John Deere Co., 383 U.S. 1, 14, 148 USPQ 459, 465 (1966).

Here, as pointed out by the appellants in the brief, the examiner's alleged "functional equivalence" assertion does not satisfactorily explain why one of ordinary skill in the art would have employed the teachings of Chang concerning a particular grid

and gas injector structure located at the bottom of a slurry holding reaction zone and designed to address problems that relate to such a slurry bubble column reactor to modify the structure of Jenkins in the manner proposed.

Concerning this matter, we note that while Jenkins may be concerned with plugging problems as they relate to a gas-phase fluidized bed polymerization reactor, Jenkins (column 6, lines 28-34) points out that the presence of a liquid layer above the grid of the gas-phase reactor would be problematic in the gas-phase polymerization reaction system. Given that disclosure, the examiner has not fairly explained how the grid structure of Chang, which is directed to being functional for placement under a liquid slurry column, would have been viewed by one of ordinary skill in the art as relevant and suggestive for use in the disparate reactor system of Jenkins that includes solid resin particles produced by polymerization. Merely alleging functional equivalence does not establish that equivalence for use in the operation of the disparate reactor system of Jenkins.

As noted by appellants, the examiner has not established any convincing reason or suggestion that would have led one of ordinary skill in the art to combine the teachings of Jenkins and

Chang in a manner so as to arrive at the claimed subject matter with a reasonable expectation of success in so doing.

Rejections based on § 103(a) must rest on a factual basis with these facts being interpreted without hindsight reconstruction of the invention from the prior art. See In re Warner, 379 F.2d 1011, 1017, 154 USPQ 173, 177 (CCPA 1967), cert. denied, 389 U.S. 1057 (1968). Our reviewing court has repeatedly cautioned against employing hindsight by using the appellants' disclosure as a blueprint to reconstruct the claimed invention from the isolated teachings of the prior art. See, e.g., Grain Processing Corp. v. American Maize-Products Co., 840 F.2d 902, 907, 5 USPQ2d 1788, 1792 (Fed. Cir. 1988).

From our perspective, the examiner's rejection appears to be premised on impermissible hindsight reasoning. On the record of this appeal, it is our view that the examiner has not carried the burden of establishing a prima facie case of obviousness with respect to the subject matter defined by the appealed claims.

Accordingly, we reverse the stated rejection.

CONCLUSION

The decision of the examiner to reject claims 1, 3-6 and 11-13 under 35 U.S.C. § 103(a) as being unpatentable over Jenkins in view of Chang is reversed.

REVERSED

CHARLES F. WARREN Administrative Patent Judge	)	
PETER F. KRATZ Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
LINDA R. POTEATE Administrative Patent Judge	)	

PFK/sld

KEIL & WEINKAUF
1350 CONNECTICUT AVENUE, NW
WASHINGTON, DC 20036